How to Build a Successful Project Using SPiRiT

Installation Management Institute

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Our Environmental Principles

- Strive to achieve Environmental Sustainability
- Recognize the interdependence of life and the physical environment
- Seek balance and synergy among human development activities and natural systems
- Continue to accept corporate responsibility and accountability under the law
- Seek ways and means to assess and mitigate cumulative impacts to the environment
- Build and share an integrated scientific, economic, and social knowledge base
- Respect the views of individuals and groups interested in Corps activities

Why Sustainable Design

- Buildings consume 30-40% of our nation's energy and 60% of our electricity
- About 1/4 of the increase in CO2 in the atmosphere is due to buildings
- Buildings consume 40% of raw stone, gravel, and sand; 25% of virgin wood
- Construction creates 2 - 2.5 pounds of solid waste per square foot -- 30 - 35% of landfill space is building demolition waste

FOUR PRINCIPLES OF SUSTAINABILITY

- You can't dig stuff out of the Earth and spread it around indefinitely (Oil and Coal)
- You can't spread human-created stuff around in Nature indefinitely (Solvents, POL)
- Don't erode Nature's capacity to do all the wonderful things Nature does (Water and wind erosion)
- Do business efficiently and make sure that everyone has enough

Adopted from the Natural Step....

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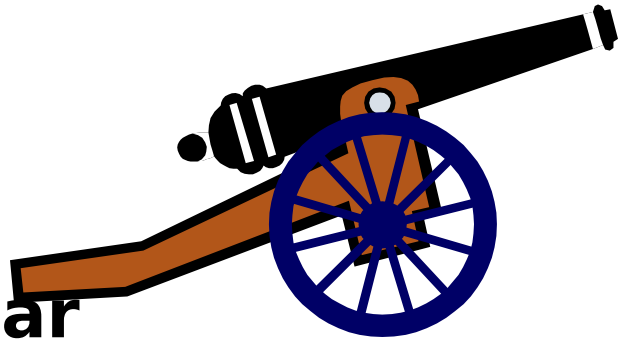
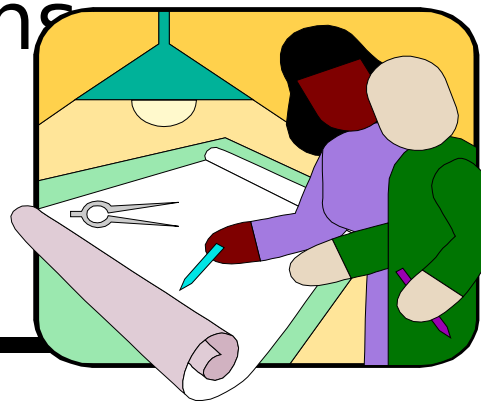
Army Buildings

- **Area – 1,000,000,000 SF**
- **Value – $200 / SF**
- **Operation – $1 / SF per year**
- **Maintenance – $2 / SF per year**
- **Energy Costs – $0.9 / SF per year**
- **Salary of Occupants – $200 / SF per year**



What Does Sustainable Design Mean In The Army?

- Environmentally friendly and energy efficient facilities and infrastructure;
- Holistic process;
- Meets current missions; and
- Accommodates future missions



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Sustainable Project Rating Tool (SPiRiT)

SPiRiT- A self-assessment tool to evaluate sustainability of all facility Construction and repair projects

- Water Efficiency
- Sustainable Sites
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Facility Delivery Process
- Current Mission
- Future Mission

ETL 1110-3-491 defines <u>sustainability</u> as ". . . the design, construction, operation and reuse/removal of the built environment (infrastructure as well as buildings) in an environmentally and energy efficient manner. . . meeting the needs of today without compromising the ability of future generations to meet their needs."

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SPiRiT Scoring

- Sustainable Sites: 20
- Water Efficiency: 5
- Energy and Atmosphere: 28
- Materials and Resources: 13
- Indoor Environmental Quality: 17

Green Results

- Facility Delivery Process: 7
- Current Mission: 6
- Future Mission: 4

Life-Cycle Synergy

- **TOTAL 100**

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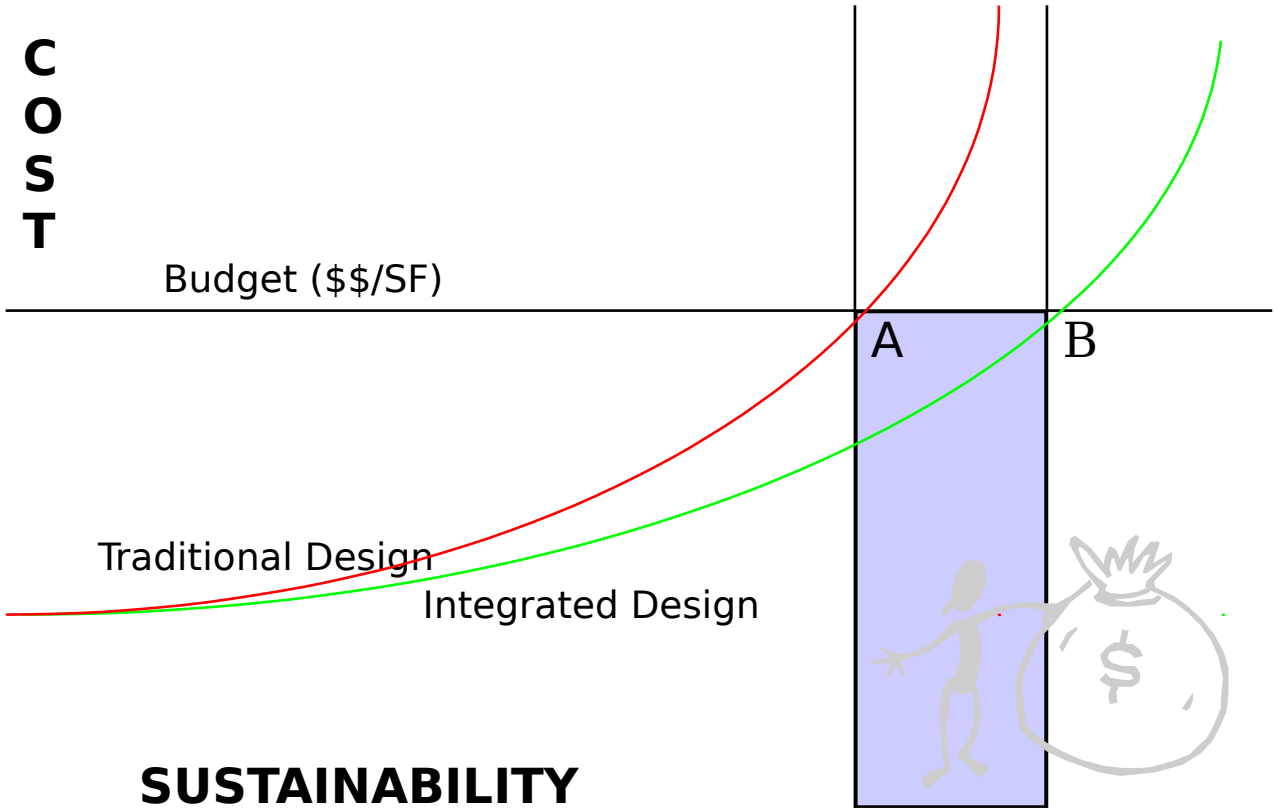
SPiRiT Rating

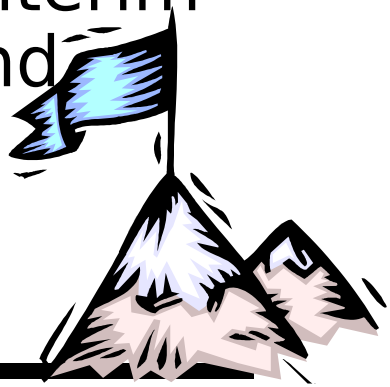
- **Points: 100 Possible.**
- **Score at least the following number to obtain the indicated rating:**
  - **75-100: Platinum**
  - **50-74: Gold**
  - **35-49: Silver**
  - **25-34: Bronze**
- **Bronze to be minimum expected score.**
- **Beginning in FY06 Gold is minimum expected score.**

Cost and Integrated Design



What Have We Done So Far

- A/E selection policy and guidance;
- Sustainable design and development training;
- District POCs;
- Web site for Army SDD resources;
- Army membership in USGBC http://www.usgbc.org
- PARC Instruction Letter 99-2 issued interim guidance on EPA designated items and recovered materials.



Corps Charrette Guidance

- **DD Form 1391 Preparation Planning Charrette Process** Engineering & Construction (ECB) 2002-16 28 June 02 http://www.hnd.usace.army.mil/techinfo/ECB/ECB%202002-16.pdf
- **Design Charrette Guidance for Army Military Construction (MILCON) Programs** Engineering & Construction (ECB) 2002-13, 6 Sept 2002 http://www.hnd.usace.army.mil/techinfo/ECB/ECB%202002-13%20(Rev.%202).pdf

How is SPiRiT Being Used?

- Project Teams hold charrettes to create 1391 (scope and cost estimate to request project funding);
- Once project is approved for design, Project Teams* hold SPiRiT goal-setting & design charrettes (*need member with SDD experience!);
- Teams document SPiRiT related decisions during design (design analysis);
- Teams use DrChecks to review design;
- Project Teams self rate to determine final SPiRiT score;
- If Team doesn't meet SPiRiT bronze, must notify HQ .

Sustainable Project Charrette Process

1-2 Day Concept Design Session

Assemble Project Team

Review Project Program & Requirements

Sustainable Design Introduction & Baseline Sustainability Issues

Introduction to SPiRiT Rating Tool

Working Groups SPiRiT Goal Setting & Concept Design

Working Groups Present Goals to Entire Audience

Project Team SPiRiT Goals Consensus

Conceptual Design Sketch Plans, Perspective & Elevations

Conceptual Design SPiRiT Goals, Design Strategies

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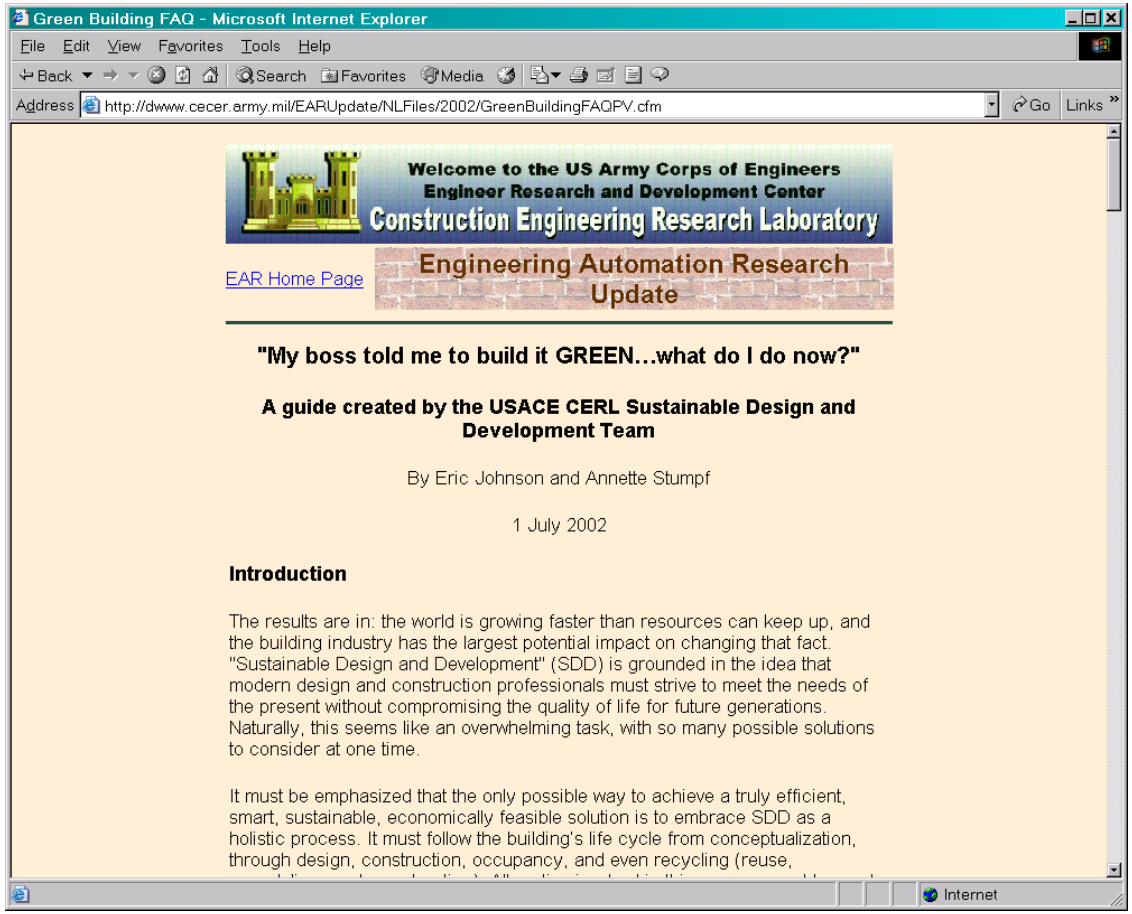
My boss told me to build it GREEN… what do I do now?


Green Building FAQ - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://dwww.cecer.army.mil/EARUpdate/NLFiles/2002/GreenBuildingFAQPV.cfm
Go Links
Welcome to the US Army Corps of Engineers
Engineer Research and Development Center
Construction Engineering Research Laboratory
EAR Home Page
Engineering Automation Research Update
"My boss told me to build it GREEN…what do I do now?"
A guide created by the USACE CERL Sustainable Design and Development Team
By Eric Johnson and Annette Stumpf
1 July 2002
Introduction
The results are in: the world is growing faster than resources can keep up, and the building industry has the largest potential impact on changing that fact. "Sustainable Design and Development" (SDD) is grounded in the idea that modern design and construction professionals must strive to meet the needs of the present without compromising the quality of life for future generations. Naturally, this seems like an overwhelming task, with so many possible solutions to consider at one time.
It must be emphasized that the only possible way to achieve a truly efficient, smart, sustainable, economically feasible solution is to embrace SDD as a holistic process. It must follow the building's life cycle from conceptualization, through design, construction, occupancy, and even recycling (reuse,
Internet

http://www.cecer.army.mil/EARUpdate/NLFiles/2002/GreenBuildingFA

SPiRiT Divisions & Roles

SPiRiT Divisions and Roles	Architect	Landscape Architect	Interior Designer	Civil Engineer	Structural Engineer	Mechanical Engineer	Electrical Engineer	Owner / Operator	Contractor/Builder	Installation Master Planner	Environmental Engineer
1.0 SUSTAINABLE SITES											
Erosion, Sedimentation, and Water Quality Control	C	C		R					C	C	C
Site Selection	C	C		C				R		R	C
Installation/Base Redevelopment	C			C				R		R	
Brownfield Redevelopment				C				R		R	C
Alternative Transportation	C			C				R		C	
Reduced Site Disturbance	R	C		C				C	R	C	C
Stormwater Management	R	C		R	C	C				C	C
Landscape and Exterior Design to Reduce Heat Islands	R	R		C	C			C	C		
Light Pollution Reduction	R		C				R	C	C		
Optimize Site Features	R	R		C				C		C	C
Facility Impact	R							C		C	C
Site Ecology		R						C		C	R
2.0 WATER EFFICIENCY											
Water Efficient Landscaping	C	R		C			C	C			C
Innovative Wastewater Technologies	C	C		C		R		C			C
Water Use Reduction	R					R		C		C	C
3.0 ENERGY AND ATMOSPHERE											
Fundamental Building Systems Commissioning	R		C		C	C	C	C	C		
Minimum Energy Performance	R		C			C	R	C			
CFC Reduction in HVAC&R Equipment	R					C					
Optimize Energy Performance	R		C			R	R	C			
Renewable Energy	C						R	C		C	C
Additional Commissioning	R			C		C	C	C	C		
Measurement and Verification	C					R	R	C	C		
Green Power							C	R		C	
Distributed Generation	C						R	C		C	C

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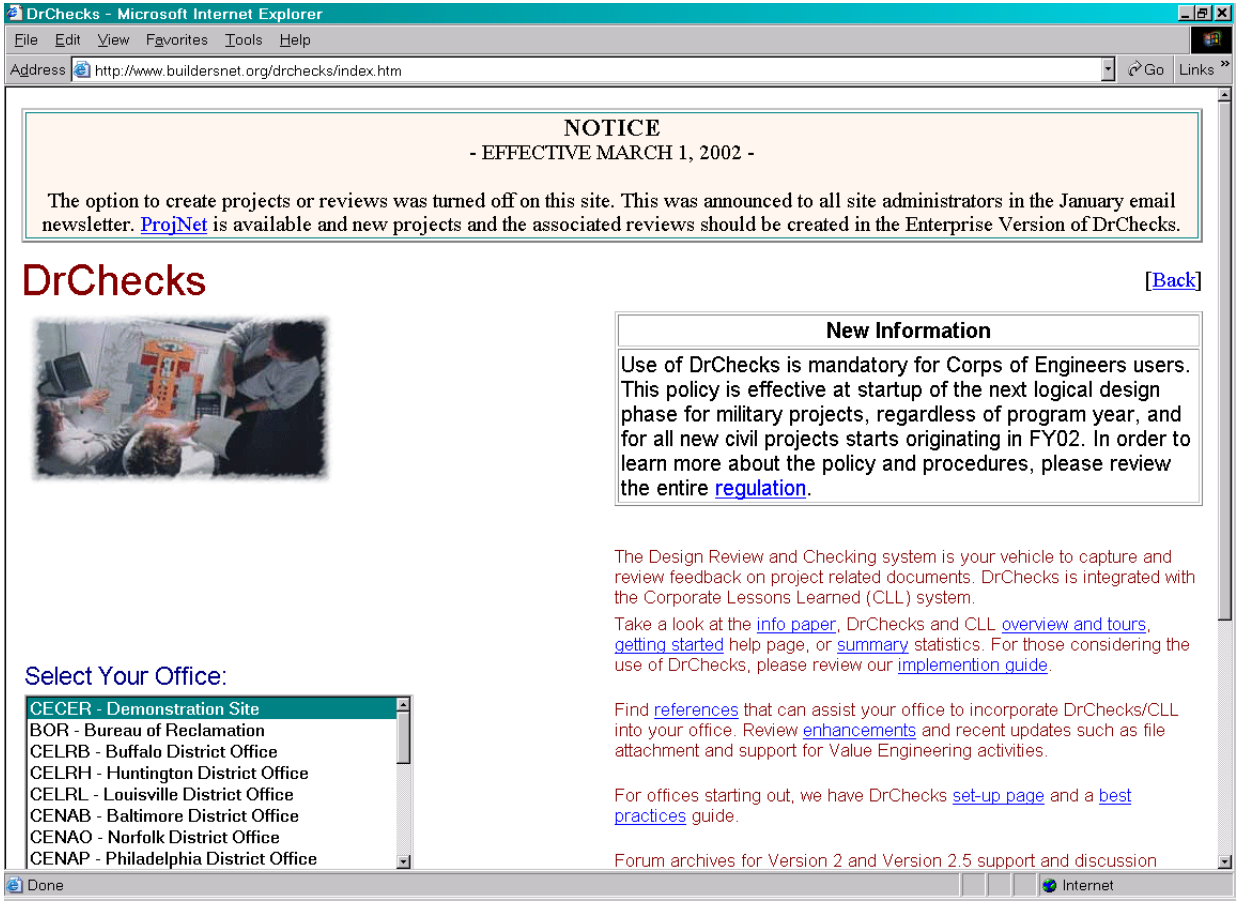
Use DrChecks for Reviews


DrChecks - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.buildersnet.org/drchecks/index.htm
Go Links
NOTICE
- EFFECTIVE MARCH 1, 2002 -
The option to create projects or reviews was turned off on this site. This was announced to all site administrators in the January email newsletter. ProjNet is available and new projects and the associated reviews should be created in the Enterprise Version of DrChecks.
DrChecks
[Back]
New Information
Use of DrChecks is mandatory for Corps of Engineers users. This policy is effective at startup of the next logical design phase for military projects, regardless of program year, and for all new civil projects starts originating in FY02. In order to learn more about the policy and procedures, please review the entire regulation.
The Design Review and Checking system is your vehicle to capture and review feedback on project related documents. DrChecks is integrated with the Corporate Lessons Learned (CLL) system.
Take a look at the info paper, DrChecks and CLL overview and tours, getting started help page, or summary statistics. For those considering the use of DrChecks, please review our implemention guide.
Select Your Office:
CECER - Demonstration Site
BOR - Bureau of Reclamation
CELRB - Buffalo District Office
CELRH - Huntington District Office
CELRL - Louisville District Office
CENAB - Baltimore District Office
CENAO - Norfolk District Office
CENAP - Philadelphia District Office
Find references that can assist your office to incorporate DrChecks/CLL into your office. Review enhancements and recent updates such as file attachment and support for Value Engineering activities.
For offices starting out, we have DrChecks set-up page and a best practices guide.
Forum archives for Version 2 and Version 2.5 support and discussion
Done
Internet

http://www.buildersnet.org/

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Vision of Future Sustainable Design Process

- Organizations use Criteria Manager to manage facility criteria & requirements
- Project teams hold charrettes using Criteria Composer to create 1391 (export to Parametric Cost Estimator and 1391 Planning Report)
- Teams use Sustainable Designer's Aid to set SPiRiT goals, record decisions & rate project
- Project teams use Layout Composer to create model for design analysis (facility object model using industry modeling standard – IAI IFC, export to COTS/GOTS)
- Teams use DrChecks to review design

ERDC TR-03-1
US Army Corps
of Engineers
Engineer Research and
Development Center
Application of LEED™ and SPiRiT
to a Proposed Building Design
Sarah Nemeth, Donald Fournier, Richard Schneider, Roch
Ducey, Franklin Holcomb, Eric Johnson, Paul Loechl,
Perrin Pellegrin, Andrew Phelps, Gary Phetteplace,
Richard Scholze, David Schwenk, Annette Stumpf, William
Taylor, Megan Tooker, John Vavrin, and Julie Webster
March 2003

http://owww.cecer.army.mil/td/tips/pub/details.cfm?PUBID=4432&TOP=1

SHOWCASE PROJECTS

- 20% of MAJCOM FY04 MILCON program (including non-privatized housing), to incorporate SPiRiT / LEED™ criteria.
- % of MAJCOM MILCON program qualifying for a certification increasing in subsequent FYs.
- Air Force Sustainable Facilities Guide tools and suggested guidelines for candidate projects selection.
- All MILCON FY09 MILCON program projects to be capable of achieving LEED™ certification.
- USGBC Submission for LEED™ certification MAJCOM prerogative.

Applications of SPiRiT

INSTALLATION	PROJECT	Rating
DSCC, OH	Physical Fitness Center	Gold
Fort Carson, CO	Training Facility	Silver
Fort Hood, TX	Environmental Training Facility	Platinum
Fort Monmouth, NJ		Barracks Renovation Silver
Fort Bragg	Installation Design Guide	NA
Korea (FED)	Sustainable Peninsula	NA
FORSCOM	Sustainable Installations (Forts Lewis, Bragg, Hood, Carson and Campbell)Camp Ederle Vicenza, Italy	NA Barracks Complex, Gold

DSCC Physical Fitness Center

DSCC Physical Fitness Center

SPiRiT/LEED Rating Projections:

- Pre-Design – SPiRiT Gold (62 Points)
- Final Design – SPiRiT Gold (64 Points)

Project Team:

- Design Agent – Louisville District Corps of Engineers
- Director, DSCC Installation Services– Kenny K.Youn
- Fitness Center Director - Mr. Craig Lyons
- Project Manager – Lyn Raque, CELRL-ED-M-A
- Master Planner – Anthony Cea, DSCC-WBC
- AE – KZF/BWSC Joint Venture
- Consultant – Gayle Lindsey, Design Harmony, Inc.
- Contractor - Not yet Awarded

Building Statistics:

- Program MCA , FY 05, PN CSC-98211
- Design Bid Build
- Design Complete Aug 2002 /Project On Hold
- Cost $5.0 Mil (PA) $3.6 Mil (CWE)
- Facility Area 2,694 Square Meters
- 800 Persons/Day Daily Use
- Concrete Masonry Bearing Wall, Steel Roof Framing, Standing Seam Metal Roof)
- 565.25 MJ/SQM/Yr Projected Energy Use

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Physical Fitness Center
DSCC (Columbus, OH)

Life Cycle Synergy

Facility Delivery Process
- Team / goal setting charrette / design reviews

Current Mission
- O& M manuals included in final specifications.
- Design incorporated Design Team comments on high quality indoor environment to satisfy users

Future Missions
- Very efficient layout eliminating all unnecessary building circulation / minimal building footprint

Green Results

Sustainable Sites
- Site selected to take advantage of existing adjacent power plant, roads, parking, and water retention basin
- Landscaping to reduce thermal gain and heat islands
- Grass pavement system for required fire truck access

Water Efficiency
- No permanent irrigation system is installed
- Fixtures flow restrictors to achieve a 30% reduction

Energy and Atmosphere
- Designed to achieve TI 800-01 energy performance criteria (required DET 570 MJ/sqm/Yr -- calculated energy usage is 565.25 MJ/sqm/Yr.)
- LCA of energy recovery units, polyisocyanurate roof insulation, and improved energy efficient windows
- Solar shading for windows / operable windows

Materials and Resources
- Site landscaping from relocated trees
- Use of recycled content steel structure, concrete masonry, and floor finishes
- Excess previous project granite pavers / wall cladding incorporated into exterior finishes

Indoor Environmental Quality (IEQ)
- Use of low / no VOC paint
- User thermal /auditory comfort, views, daylighting and systems controllability optimized for facility function

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Ft. Carson Training Facility

SPiRiT/LEED Rating Projections:

- Pre-Design – SPiRiT Bronze (28 Points)
- Final – SPiRiT Silver (48 Points)

Building Statistics:

- Ft. Carson DECAM Sustainable Facilities Demonstration, Funded by FORSCOM P2 Dollars, FY01, UMMCA
- Design Bid Build
- November 2002 Completion Date
- Cost $560,000
- Facility Area 2,800 GSF
- Facility Footprint 3,100 SF
- 70 Person Occupancy
- Cast Concrete, Steel Roof Framing, Standing Seam Metal Roof
- 25% Energy Use Reduction
- Life-cycle Cost Savings Undetermined

Project Team:

- Design Agent - Omaha District, U.S. Army Corps of Engineers
- Public Works Director - Col Hal Alguire
- Project Managers - Linda White, Omaha & Scott Clark, Ft. Carson DECAM
- Master Planner - Bill Davis
- AE - Wilson and Company
- Consultant - HDR, Pacific Northwest National Labs
- Construction Contractor – Torres/Bryant JV – Alliance Sub

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Training Facility
Ft. Carson Colorado

Life Cycle Synergy

Facility Delivery Process
- 'Green Team' / goal setting charrette

Current Mission
- Appropriate product selection
- Attention to daylighting / improved IEQ / high quality, functional, healthy interior environment

Future Missions
- Planned life and future uses

Green Results

Sustainable Sites
- Located 2 miles from natural gas fueling station

Water Efficiency
- Low flow toilets and electronic metered water faucets
- No outdoor watering system, xeriscape plan

Energy and Atmosphere
- Building orientation / low e insulating windows
- Natural lighting / reduced cooling/heating reqt
- Electric instantaneous water heaters under sinks
- Natural cooling cupola, no AC
- High efficiency natural gas furnace and good insulation
- Windows and furnace Energy Star compliant

Materials and Resources
- Materials Reuse from demolition projects
- Use of recycled content toilet partitions, insulation, steel structure and concrete
- Structure and concrete were locally manufactured

Indoor Environmental Quality (IEQ)
- Use of zero VOC paint
- Sub slab vent system for radon collection & release

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Barracks Complex Camp Ederle, Vicenza, Italy

SPiRiT/LEED Rating Projections:

- Pre-Design – SPiRiT Bronze
- Final Design – SPiRiT Gold (52 Points)
- LEED Registered
- Target LEED Silver (34 Points)

Project Team:

- Design Agent - Naval Facilities Engineering Cmd
- Public Works Director - Jeff Guyne, Acting
- Project Manager - Al West, PE
- Master Planner - Frank Powell
- AE - Clark Nexsen Architecture & Engineering
- Consultant - None
- Contractor - Not yet Awarded

Building Statistics:

- MCA FY 03 Project Number 55586
- Design Bid Build
- May 2005 Projected Completion Date
- Cost $31,000,000 (PA)
- Facility Area 10,800 Square Meters
- Facility Footprint 3,100 Square Meters
- 300 Person Occupancy
- Cast Concrete, Steel Roof Framing, Clay Tile Roof
- 34% Energy Use Reduction

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Barracks Complex

Camp Ederle, Vicenza, Italy

Life Cycle Synergy

Facility Delivery Process

- Pre-Design Meeting
- Functional Analysis Concept Development (FACD) Charrette

Current Mission

- Quality of Life Improvements
- Operation & Maintenance Considered

Future Missions

- Longevity of Materials & Systems Considered
- No usage change expected

Green Results

Sustainable Sites

- Erosion & Sediment Control
- Site Selection
- Energy Star Roof

Water Efficiency

- Water Efficient Fixtures
- Indigenous Landscape – No Irrigation

Energy and Atmosphere

- 34% Energy Use Reduction
- $22,000/yr Savings Building 1
- $34,000/yr Savings Building 2

Materials and Resources

- Local Materials
- Construction Waste Management
- Recycled Materials
- Certified Wood

Indoor Environmental Quality (IEQ)

- Separate Ventilation System for Smoking Rooms
- Construction IAQ Management
- Low /Zero VOC Carpets, Paints, Sealants
- Individual Room HVAC Control

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FY 2002 SHOWCASE PROJECTS

SPiRiT	INSTALLATION / PROJECT	PA($000)	CWE($000)
Bronze	Fort Richardson Whole Barracks Renewal	45,000	39,187
Gold	Fort Gordon Communication Facility	11,000	9,272
Silver	Camp Jackson General Instruction Bldg	6,100	23,716
Silver	Fort Polk Education Center	10,800	10,785
Silver	Fort Monmouth Military Prep School	20,000	19,375
Bronze	Fort Lewis Whole Barracks Renewal	48,000	37,600

FY 2003 SHOWCASE PROJECTS

PN	INSTALLATION	PROJECT	PA($000)
048707	Fort Benning	Barracks Complex	45,000
041631	Fort Bragg	Barracks, Armistead	50,000
048674	Fort Campbell	Barracks, Range Road	49,000
052068	Schofield Barrracks	Barracks, Foote Ave-C	42,000
057341	Fort Wainright	Mission Support Training	25,000
55837	Fort Detrick	Community Support Center	2,850

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FY 2004 SHOWCASE PROJECTS

PN	INSTALLATION	PROJECT	PA($000)
51112	Fort Campbell	Barracks Renewal PH II	
34048	Schofield Barracks	Information System Facility	
53321	Fort Gillem	Special Purpose Facility	
58604	Fort Huachuca	Army Family Housing	
57785	Fort Wainright	Army Family Housing	
58677	Fort Knox	Army Family Housing	
34082	White Sands	Army Family Housing	

List Incomplete - Additional Projects Pending

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Validation of SPiRiT Process (Sustainable Project Rating Tool)

U. S. Army Assistant Chief of Staff for Installation Management

Validation Team:
ACSIM: John Scharl
IMA: Cecil Goodwin
USACE: Harry Goradia
ERDC: Richard Schneider

Validation of SPiRiT Process

PURPOSE: Demonstrate Credibility of Army SPiRiT Scoring Process

- **Validate effectiveness of SPIRIT self assessment process**
- **Respond to Project Delivery Team (PDT) questions/concerns**
- **Identify PDT lessons learned**
- **Provide SPIRIT process enhancement recommendations**

Projects Validated:

- **Fort Lewis, WA - Whole Barracks Renewal, NF Area, Phase 1**
- **Fort Richardson, AK - Barracks Complex - D Street, Phase 2**
- **Fort Polk, LA - Consolidated Library/General Education Center**
- **Fort Gordon, GA - Installation Communications Facility**
- **Fort Meade, MD - Child Development Center (Non-showcase)**
- **Camp Carroll, Korea - Physical Fitness Training Center (Non-Showcase)**

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Validation of SPiRiT Process

Summary Findings:

- **Project SDD Teams have undervalued their SPiRiT Ratings**
- **Confirmed that SDD does not increase project costs**
- **Showcase Projects have generated increased Command awareness**
- **Army making progress towards achieving uniform SPiRiT Gold ratings in FY06**

Summary Recommendations:

- **Establish Integrated Project Delivery Team including all key Stakeholders early;**
- **Train team in sustainable design and SPiRiT;**
- **Keep PDT 'energized' and active throughout the life of the project;**
- **Set SPiRiT Goal(s) and conduct SPiRiT assessment as early as possible;**
- **Update SPiRiT Score from Project Parametric (Concept) Design Charrette, during design reviews, through Project Beneficial Occupancy Date (BOD); and**
- **Document SPiRiT points assessment/scoring rationale.**

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Whole Barracks Renewal, Fort Lewis, WA

SPiRiT Rating:

- Target rating - SPiRiT Bronze
- Programmatic Design (Not Applicable)
- Parametric (Concept) Design - (Not Applicable)
- Final Design – SPiRiT Silver (43 Points)

Building Statistics:

- MCA, FY 02, Project Number 041746
- Design Bid Build
- Projected Completion Dec 2003
- Original Cost $48Mil, Reduced to $43 Mil (PA) $37.6 Mil (CWE)
- Facility Area ~15,000 Sq Meters (Barracks 11,180 SM), 1 BTN HQ, 2 MCOF, 1 LCOF)
- (Barracks Facility Footprint ~ 6,200 Square Meters (Barracks 4,100 SM)
- 300 Person Barracks Occupancy
- Construction (Type IIB w/ Steel Frame, Brick Veneer, EIFS Walls, Concrete Tile Roofs)
- 31% Energy Use Reduction (Barracks)

Project Team:

- Design Agent – U. S. Army Engineer District, Seattle
- Public Works Director – Col Steven Perrenot
- Project Manager – MAJ Stephen J. Ward
- Master Planner – Steve Glover
- A/E – USAED Seattle/ WJA
- Consultant – Olympic Associates Co. (VE)
- Contractor – Baugh-Skanska

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Whole Barracks Renewal, Green Results
Fort Lewis, WA

Life Cycle Synergy

Facility Delivery Process
- Experienced Design Team Leaders
- Design Team Training Exercises

Current Mission
- Quality of Life Improvements
- Operation & Maintenance Considered

Future Missions
- Longevity of Materials & Systems Considered
- Designed for Future Conversion to Office Function

Sustainable Sites
- Constructed Storm Water Management System
- Low Impact Highly Functional Site Selection
- Compatible Redevelopment Previous Barracks Site
- Increased Density Within Existing Infrastructure
- Alternative Transportation – Cycling
- Facilities Clustered for Future Mass Transit

Energy and Atmosphere
- Installation Has Green Energy Contract
- 31% Energy Use Reduction in Barracks/SCB

Materials and Resources
- Recycled Content Structure and Materials
- 20% of Materials Are Local/regional

Indoor Environmental Quality (IEQ)
- Separate Ventilation System for Smoking Rooms
- Mechanical Ventilation to ASHRAE Standards
- Low Emitting Adhesives, Sealants, Paints and Wood Composites
- Design to Control Indoor Chemicals and Pollutants
- Individual Room HVAC Control
- Thermal Comfort to ASHRAE Standards
- Daylighting of Barracks Rooms
- Noise Control in Barracks

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Whole Barracks Renewal, PHII Ft. Richardson, AK

SPiRiT Rating:

- Target Rating – SPiRiT Bronze (25 Points)
- Programmatic Design (Not Applicable)
- Parametric Design – (Not Applicable)
- Final Design – SPiRiT Bronze (26 Points)

Building Statistics:

- Dining Facility
- MCA FY 02, Project Number 052830
- Design Bid Build
- Projected Completion 15 Dec 2003
- Cost $45Mil (PA) $39.187Mil (CWE)
- (Dining) Facility 2117 Square Meters
- (Dining) Facility Footprint 2117 SM
- 251-500 Person Occupancy
- Construction Type (Steel Frame, Masonry Enclosure, Standing Seam Metal Roof)
- 10% Energy Use Reduction

Project Team:

- Design Agent – U. S. Army Engineer District, Alaska
- Public Works Director – COL Dave Snodgrass
- Project Manager - Mr. Chris R. Dalsfoist, POA
- Master Planner – George Newman
- AE – Alaska District In-House w/ Koonce Pffefer Bettis
- Consultant – Clevenger and Associates
- Contractor – Osborne Construction Company

Whole Barracks Renewal PHII, Ft. Richardson, AK

Life Cycle Synergy

Current Mission

- Furnishing & Finishes Selected for Life-Cycle Durability & Maintenance Ease
- Safe, Healthy, & Functional Work/Living Environment
- Quality of Life Improvements

Green Results

Sustainable Sites

- Constructed Storm Water Management System
- Low Impact Highly Functional Site Selection
- Access to Installation Transportation
- Site Enhancements

Materials and Resources

- Recycled Content Structure

Indoor Environmental Quality (IEQ)

- Mechanical Ventilation to ASHRAE Standards
- Green Seal Paints and Coatings
- Design to Control Indoor Chemicals & Pollutants
- Occupant Temperature & Lighting Controls
- Operable Windows
- Thermal Comfort to ASHRAE Standards
- Daylight & Direct Views
- Acoustic Isolation for Occupant Comfort

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Consolidated Library/General Education Center

Fort Polk, LA

SPiRiT Rating:

- Target Rating – SPiRiT Gold (55 Points)
- Programmatic Design (Not Applicable)
- Parametric Design – SPiRiT Silver (47 Points)
- Final Design – SPiRiT Gold (55 Points)

Building Statistics:

- MCA FY 02, Project Number 002298
- Design-Build
- 31 Jan 04 Projected Completion Date
- Cost $10.8Mil (PA) $10.785Mil (CWE)
- Facility Area 6,900 Square Meters
- Facility Footprint 4,200 Square Meters
- 740 Person Occupancy
- Construction Type (Steel Frame, Masonry Enclosure, Standing Seam Metal Roof)
- 10% Energy Use Reduction

Project Team:

- Design Agent – U. S. Army Engineer District, Ft.Worth
- Public Works Director – Roy Bethel
- Project Manager - Steve Wright
- Master Planner – David Broyles
- Design/Build Contractor – Roy Anderson Corporation

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Consolidated Library /General Education Center, Fort Polk, LA

Life Cycle Synergy

Facility Delivery Process
- Team Selected & Trained in Holistic/Sustainable Design
- Key Team Members LEED Accredited
- Goals & Metrics Established During Project Charrettes

Current Mission
- Operation & Maintenance Manuals
- Furnishing & Finishes Selected for Life-Cycle Durability & Maintenance Ease
- Safe, Healthy, & Functional Work/Living Environment

Future Missions
- Longevity of Materials & Systems Considered

Green Results

Sustainable Sites
- Approved Erosion & Sediment Control Plan
- Low Impact Highly Functional Site Selection
- Located on Installation Transit Line
- Parking Sized/Located to Share w/ Adjacent Future Facili
- Restored Site Open Areas & Reduced Footprint
- No net Run-Off Increase - Stormwater Management
- Vegetative Shading of Parking Surfaces
- EnergyStar Eligible Standing Seam Metal Roof

Water Efficiency
- Highly Efficient Irrigation

Energy and Atmosphere
- Additional Commissioning

Materials and Resources
- Construction Waste Management
- Recycled Content Materials & Local Materials

Indoor Environmental Quality (IEQ)
- CO^2 Sensor control over Fresh Air Mix
- VAV Distributed Make-Up Air
- Construction IAQ Management
- Low /Zero VOC Carpets, Paints, Sealants
- Humidity Control and Monitoring
- Environmental Noise Mitigation

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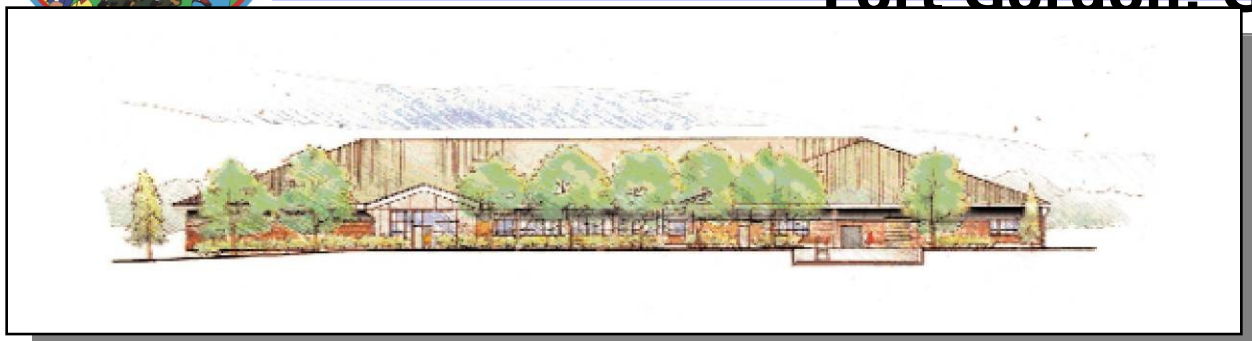
Installation Communications Facility

Fort Gordon, GA



SPiRiT Rating:

- Target LEED Gold (39 Points)
- Programmatic Design - NA
- Parametric Design–SPiRiT Gold (56 Points)
- Final Design –SPiRiT Gold (70 Points)

Project Team:

- Design Agent – U. S. Army Engineer District, Savannah
- Public Works Director – Vincent E. Grewatz
- Project Manager – Efrain Rosario
- Master Planner – Carlton Shuford
- Design/Build Contractor – TENG Construction LLC
- Facility Owner – Directorate of Information Management

Building Statistics:

- MCA FY 02, Project Number 030629
- Design Build
- 15 March 2004 Projected Completion Date
- Cost $11 Mil (PA) $9.660 Mil (CWE)
- Facility Area 38,000 Square Feet
- Facility Footprint 78,940 Square Feet
- Site Area 398,360 Square Feet
- 75 Person Occupancy
- Construction Type (Steel Frame, Masonry Enclosure, Structural Standing Seam Metal Roof)
- 40% Energy Use Reduction

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Green Results

Installation Communications Facility
Fort Gordon, GA

Life Cycle Synergy

Facility Delivery Process
- Pre-Design Meeting
- Functional Analysis Concept Development (FACD) Charrette
- Identify Project Goals

Current Mission
- Quality of Life Improvements
- Functional & Healthy Work Environment

Future Missions
- Longevity of Materials & Systems Considered

Sustainable Sites
- Erosion & Sediment Control
- Site Selection; Energy Star Roof
- Site Ecology

Water Efficiency
- Water Efficient Fixtures
- Indigenous Landscape – No Irrigation

Energy and Atmosphere
- 40% Energy Use Reduction
- Building Systems Commissioning

Materials and Resources
- Local Materials
- Construction Waste Management
- Recycled Materials; Certified Wood

Indoor Environmental Quality (IEQ)
- Mechanical Ventilation to ASHRAE Stds
- Separate Ventilation System for Copy Rooms
- Construction IAQ Management
- Low /Zero VOC Carpets, Paints, Sealants
- Individual Room HVAC Control
- Noise Control

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Child Development Center

Fort Meade, MD

SPiRiT Rating:

- Target Rating – SPiRiT Bronze (25 Points)
- Programmatic Design (Planning Charrette/1391) (Not Applicable)
- Parametric (Concept) Design - SPiRiT Silver (31 Points)
- Final Design - SPiRiT Silver (38 Points)
- Current (40% Construction Complete) - SPiRiT Silver (38 Points)

Project Team:

- Design/Constr Agent - U. S. Army Engineer District, Baltimore
- Public Works Director - LTC Rodney W. Gettig
- Project Manager - Scott Drumheller
- Child & Youth Services - Martha McClary & Bea Curl
- Installation Master Planner - Andy Bagnall
- Criteria Development Team Leader - Antoine Plessy
- Value Engineer - John Vogel
- Project Engineer - Pat Sampsel
- Design/Build Team - Samaha Assoc, PC & Desbuild Inc

Building Statistics:

- MCA FY 02, Project Number 023721
- Design Build, Army Standard Design
- Feb 2004 Projected Completion Date
- Cost $5.8 M (PA) $6.0M (CWE)
- Facility Area 2,285 Square Meters
- Facility Footprint 2,285 Square Meters
- 303 Child Occupancy + 75 Staff Members
- Construction Type (Masonry Perimeter Bearing Walls, Steel Trusses/Interior Partitions, Standing Seam Metal Roof)
- 10% Energy Use Reduction

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Child Development Center
Fort Meade, MD

Life Cycle Synergy

Current Mission
- CDC Standard Design / CDC Accreditation Reqts.

Future Missions
- Furnishing & Finishes and Playground Equipment Selected for Life-Cycle Durability & Maintenance Ease

Green Results

Water Efficiency
- Maximized Use of Native Plant Species
- Landscape Irrigation System Not Required

Sustainable Sites
- Stormwater Management & Sediment /Erosion Control Plan to Strict MD DE Reqts
- Shared Parking With Adjacent Facilities
- Existing Stormwater Management Infrastructure
- Reduced impervious area by 35%
- Design Respects/Avoids Adjacent Stream Buffer Area
- Complies With MD Forest Conservation Act Reqts

Materials and Resources
- Recycled Content Structure

Indoor Environmental Quality (IEQ)
- Adherence to ASHRAE Air Requirements
- Facility IEQ Design to Strict CDC Standards
- Use of Tobacco Products in or Around Facilities Prohibited
- Air Diffusion Maximized for Each Space.
- Filtration Media Replaced Prior to Occupancy
- HVAC System Controls Limit Building Humidity
- Permanent Carbon Dioxide Monitoring System
- Low Emitting Materials; Low VOC Paints & Adhesives
- Natural Day Lighting for All Occupied Spaces
- Sound Attenuation for All Corridors, Modules, Administrative Spaces, & Toilet Rooms
- Design to Control Indoor Chemical/pollutants at Source

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Physical Fitness Center

SPiRiT Rating:

- Target Rating – SPiRiT Bronze (25 Points)
- Programmatic Design (Not Applicable)
- Parametric (Concept) Design– SPiRiT Bronze (25 Points)
- Final Design – SPiRiT Bronze (28 Points)

Project Team:

- Design Agent – U. S. Army Engineer District, Far East
- Public Works Director – Kevin Jung
- Project Manager – Ted Song
- Master Planner – Ronnie Lee
- AE – Far East District Design Branch
- Consultant – N/A
- Contractor – Byucksan Construction Co

Building Statistics:

- MCA FY 02, Project Number 52518
- Design Bid Build
- Dec 2003 Projected Completion Date
- Cost $8.1 Mil (PA) $5.8 Mil (CWE)
- Facility Area 3,296 Square Meters
- Facility Footprint 3,300 Square Meters
- 355 Person Occupancy
- Construction Type - Steel Framing with CMU exterior wall, & Standing seam metal Roof
- 10 % Energy Use Reduction

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Physical Fitness Center

Camp Carroll, Korea

Life Cycle Synergy

Facility Delivery Process

- Pre-Design Meeting
- Functional Analysis Concept Development (FACD) Charrette
- Holistic Delivery of Facility

Current Mission

- Quality of Life Improvements
- Operation & Maintenance Considered
- Design for soldier and workforce productivity and Retention

Life Cycle Synergy (cont)

Future Missions

- Longevity of Materials & Systems Considered
- No usage change expected

Green Results

Sustainable Sites

- Erosion & Sediment Control
- Site Selection

Water Efficiency

- Water Efficient Fixtures
- Indigenous Landscape – No Irrigation

Materials and Resources

- Local Materials

Indoor Environmental Quality (IEQ)

- Separate Ventilation System for Smoking Rooms
- Construction IAQ Management
- Low /Zero VOC Carpets, Paints, Sealants
- Individual Room HVAC Control

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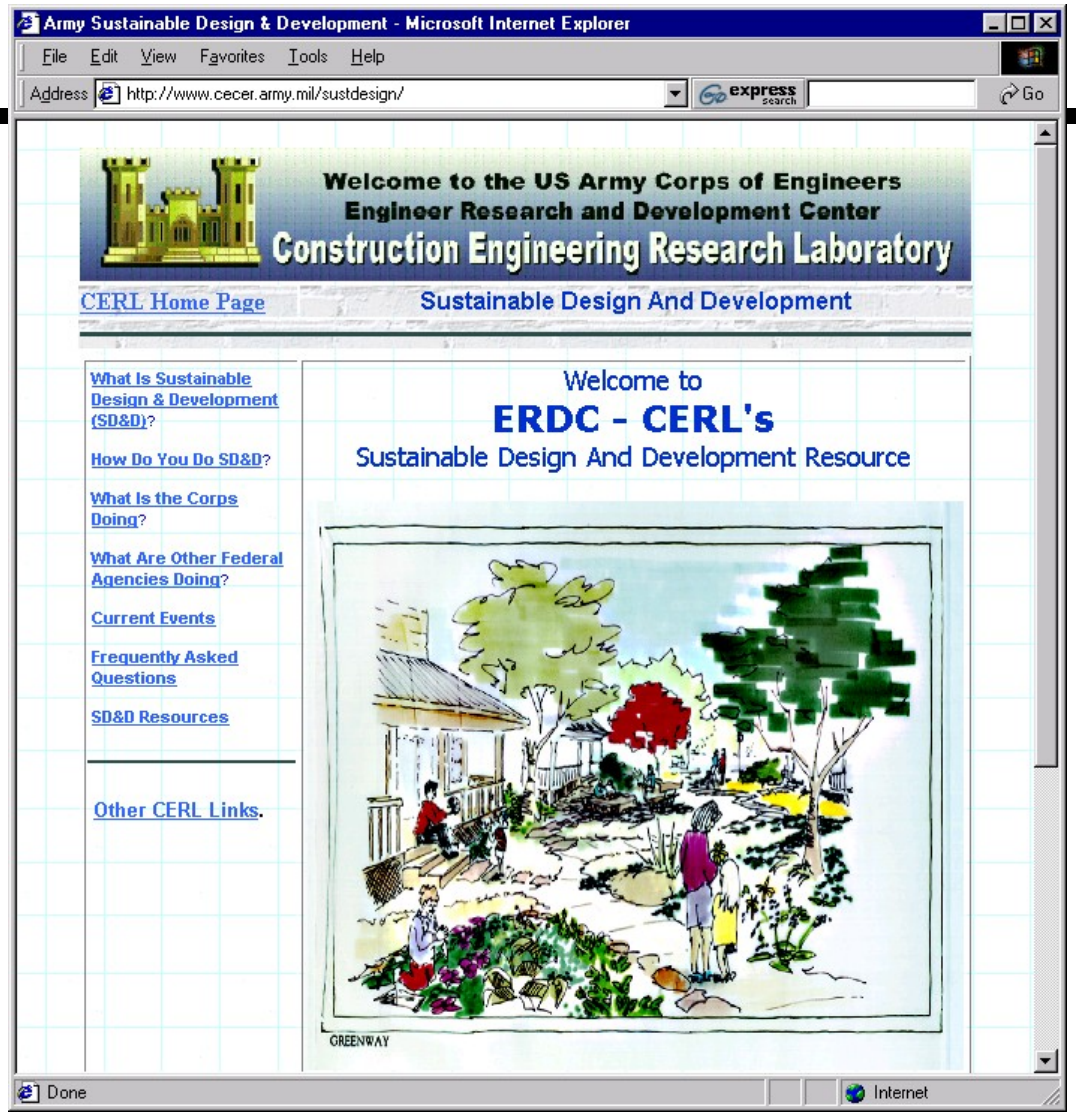
Hints for Success:

- Consider Sustainability during Master Planning, 1391s, design, construction, O&M and demolition/reuse;
- SD&D is a collaborative multidisciplinary team effort;
- Planning and Design Charrettes focus team on sustainable goals so project can meet SPiRiT rating;
- Select recycled & environmentally preferable materials;
- Construction practices must care for the environment and minimize construction waste;
- This is a process change, requires patience, flexibility and willingness to learn new patterns!
- Successful projects ALL have a sustainable “zealot”!

Where do I find the information I need?



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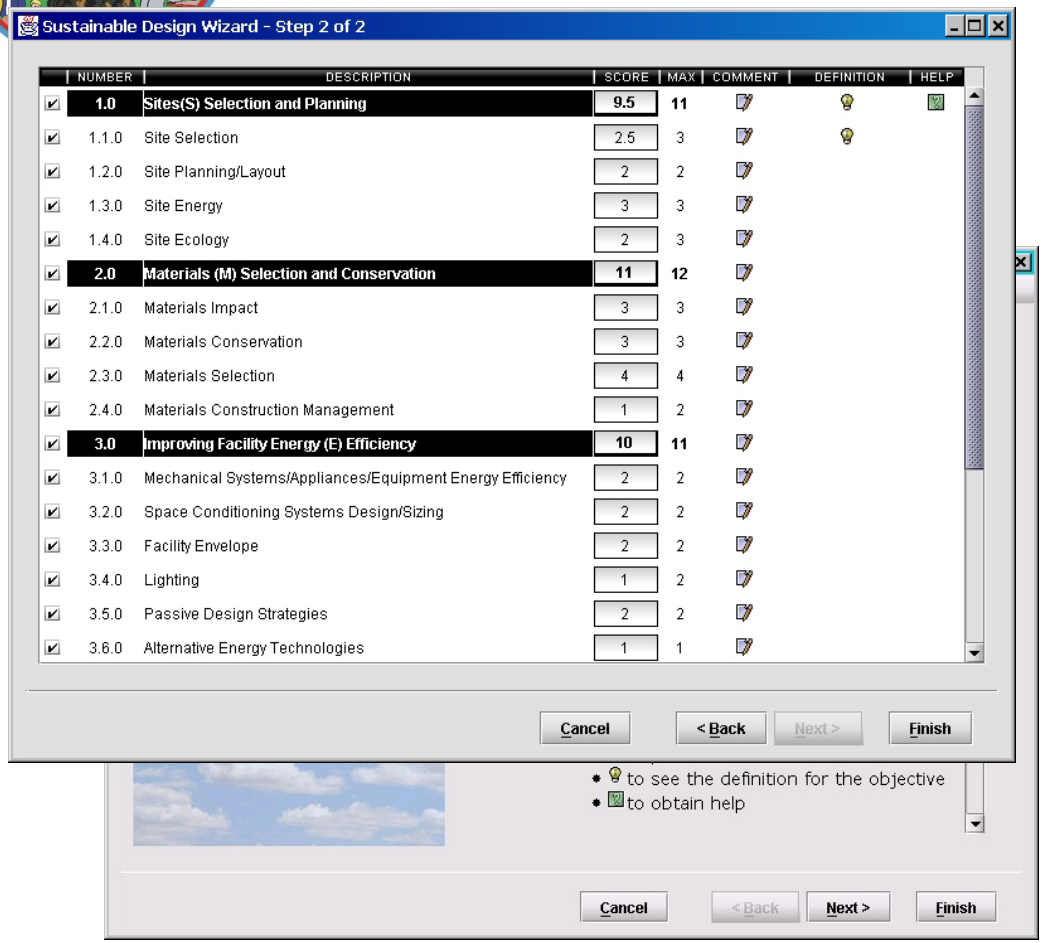
Sustainable Designers Aid


Sustainable Design Wizard - Step 2 of 2
NUMBER | DESCRIPTION | SCORE | MAX | COMMENT | DEFINITION | HELP
1.0 Sites(S) Selection and Planning 9.5 11
1.1.0 Site Selection 2.5 3
1.2.0 Site Planning/Layout 2 2
1.3.0 Site Energy 3 3
1.4.0 Site Ecology 2 3
2.0 Materials (M) Selection and Conservation 11 12
2.1.0 Materials Impact 3 3
2.2.0 Materials Conservation 3 3
2.3.0 Materials Selection 4 4
2.4.0 Materials Construction Management 1 2
3.0 Improving Facility Energy (E) Efficiency 10 11
3.1.0 Mechanical Systems/Appliances/Equipment Energy Efficiency 2 2
3.2.0 Space Conditioning Systems Design/Sizing 2 2
3.3.0 Facility Envelope 2 2
3.4.0 Lighting 1 2
3.5.0 Passive Design Strategies 2 2
3.6.0 Alternative Energy Technologies 1 1
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to see the definition for the objective
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What and When:

- Link to SPiRiT
- Provide process for using SPiRiT.
- Record and tract rationale
- Generates SPiRiT rating
- Reuse previous strategies for subsequent projects
- Prototype (Apr 02)
- Sustainable Designers Aid, r1 (Oct 02)

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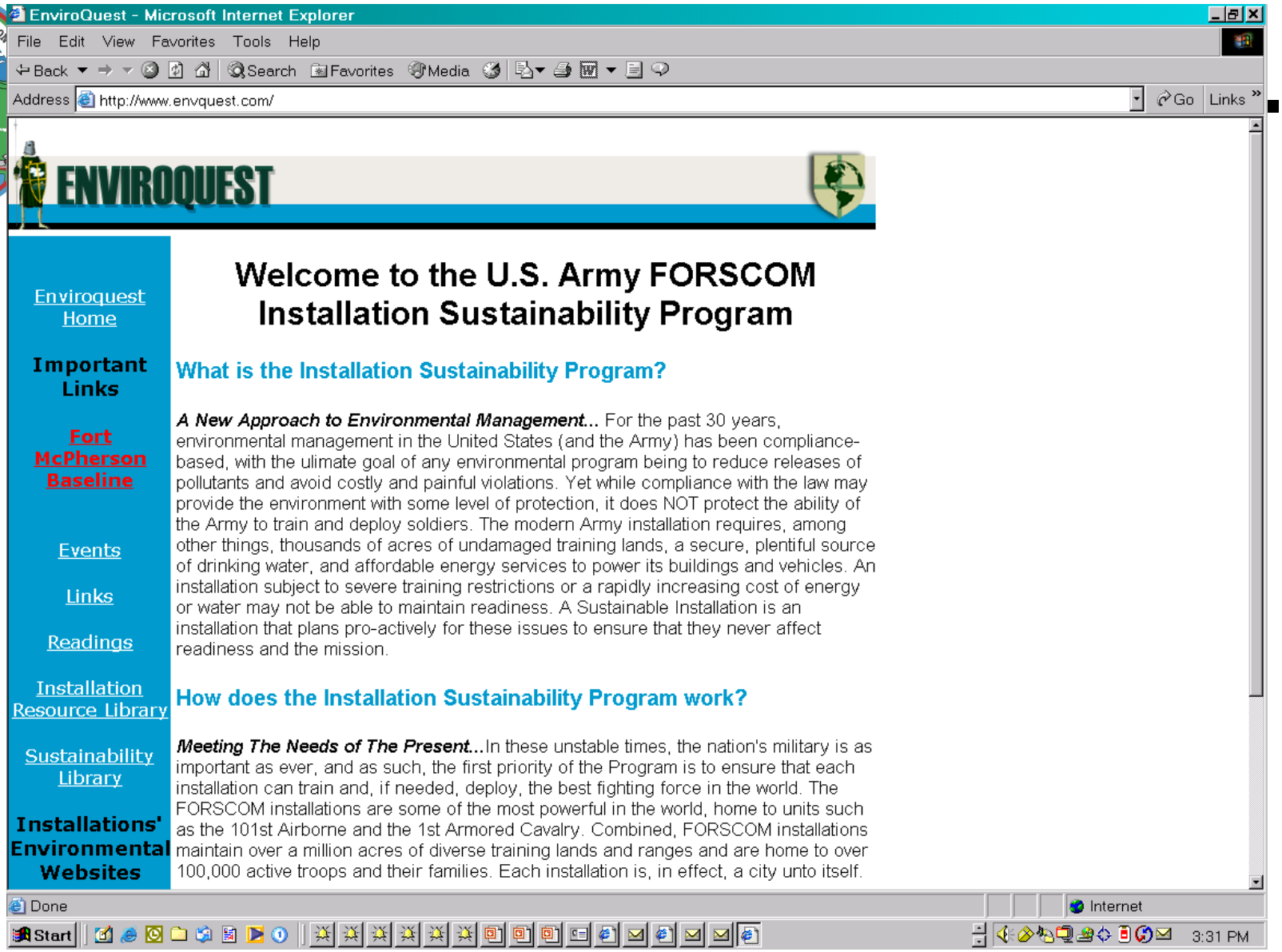
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Sustainability Library
Installations' Environmental Websites
Welcome to the U.S. Army FORSCOM Installation Sustainability Program
What is the Installation Sustainability Program?
A New Approach to Environmental Management... For the past 30 years, environmental management in the United States (and the Army) has been compliance-based, with the ulimate goal of any environmental program being to reduce releases of pollutants and avoid costly and painful violations. Yet while compliance with the law may provide the environment with some level of protection, it does NOT protect the ability of the Army to train and deploy soldiers. The modern Army installation requires, among other things, thousands of acres of undamaged training lands, a secure, plentiful source of drinking water, and affordable energy services to power its buildings and vehicles. An installation subject to severe training restrictions or a rapidly increasing cost of energy or water may not be able to maintain readiness. A Sustainable Installation is an installation that plans pro-actively for these issues to ensure that they never affect readiness and the mission.
How does the Installation Sustainability Program work?
Meeting The Needs of The Present...In these unstable times, the nation's military is as important as ever, and as such, the first priority of the Program is to ensure that each installation can train and, if needed, deploy, the best fighting force in the world. The FORSCOM installations are some of the most powerful in the world, home to units such as the 101st Airborne and the 1st Armored Cavalry. Combined, FORSCOM installations maintain over a million acres of diverse training lands and ranges and are home to over 100,000 active troops and their families. Each installation is, in effect, a city unto itself.
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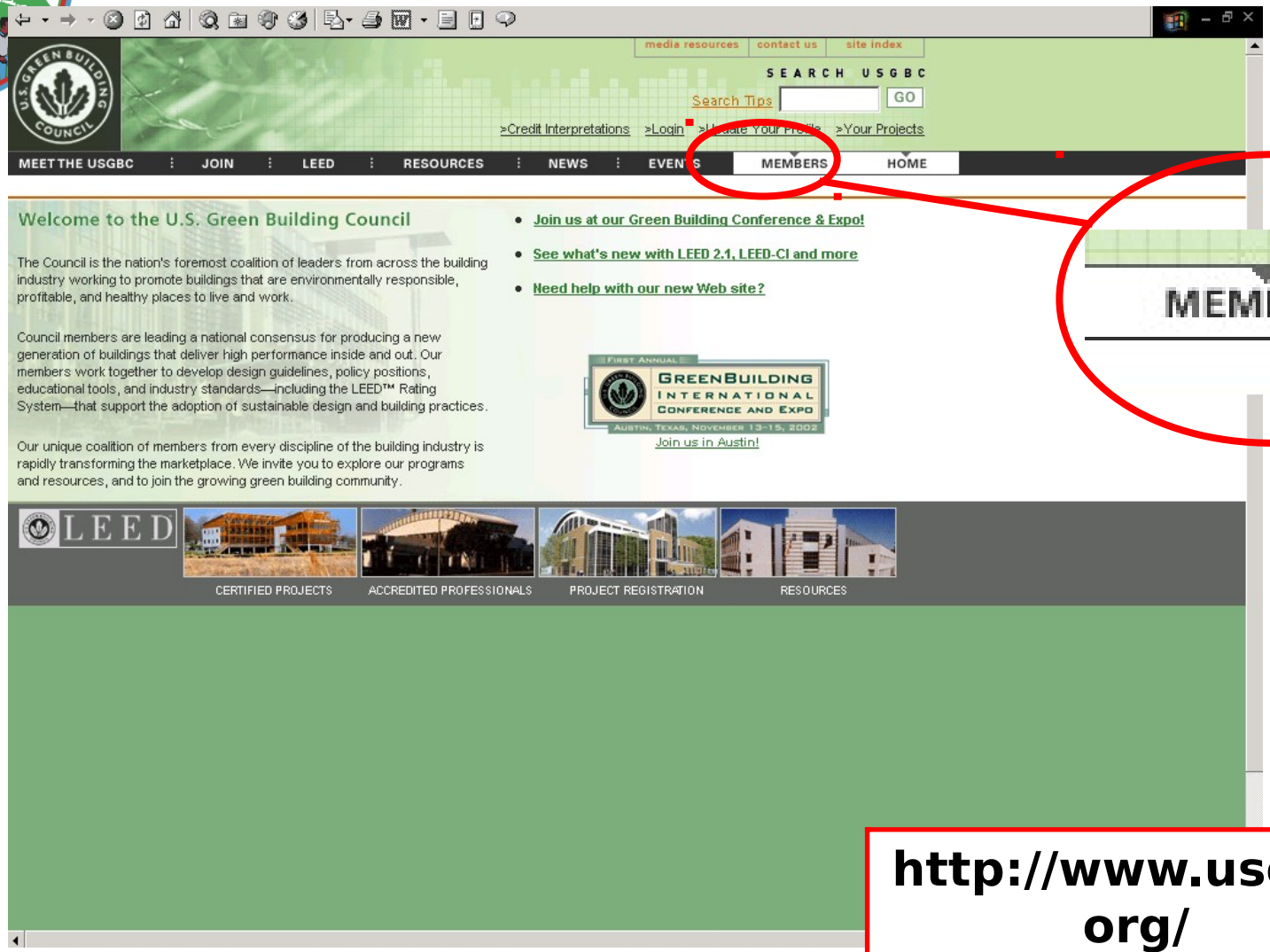
Army USGBC Membership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The Council is the nation's foremost coalition of leaders from across the building industry working to promote buildings that are environmentally responsible, profitable, and healthy places to live and work.
Council members are leading a national consensus for producing a new generation of buildings that deliver high performance inside and out. Our members work together to develop design guidelines, policy positions, educational tools, and industry standards—including the LEED™ Rating System—that support the adoption of sustainable design and building practices.
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Validation of SPiRiT Process

PURPOSE: Demonstrate Credibility of Army SPiRiT Scoring Process

- **Validate effectiveness of SPIRIT self assessment process**
- **Respond to Project Delivery Team (PDT) questions/concerns**
- **Identify PDT lessons learned**
- **Provide SPIRIT process enhancement recommendations**

Projects Validated:

- **Fort Lewis, WA - Whole Barracks Renewal, NF Area, Phase 1**
- **Fort Richardson, AK - Barracks Complex - D Street, Phase 2**
- **Fort Polk, LA - Consolidated Library/General Education Center**
- **Fort Gordon, GA - Installation Communications Facility**
- **Fort Meade, MD - Child Development Center (Non-showcase)**
- **Camp Carroll, Korea - Physical Fitness Training Center (Non-Showcase)**

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Points of Contact

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- U. S. Army Corps of Engineer SDD POC - Harry Goradia, CECW-ET, 202/761-7170, harry.goradia@usace.army.mil
- U. S. Army ACSIM POC - John Scharl, DAIM-FDF, 703/428-7614 , Email John.Scharl@hqda.army.mil
- Guidance for Sustainable Building Delivery - Richard L. Schneider, CEERD-CF-N, 217/373-6752, richard.l.schneider@erdc.usace.army.mil
- Sustainable Designer's Aid - Annette L. Stumpf, CEERD-CF-N, 217/373-7542, annette.l.stumpf@ erdc.usace.army.mil
- **SPiRiT**: Call Annette or Rich